



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

N62578.AR.000421  
NCBC DAVISVILLE  
5090.3a

April 4, 1995

Mr. Robert Krivinskas  
U.S. Department of the Navy  
Northern Division - NAVFAC  
10 Industrial Highway  
Code 1823 - Mail Stop 82  
Lester, PA 19113-2090

Re: Comments on the Draft Focused Feasibility Study (FFS) for Site 9, dated March 1995, at the former Naval Construction Battalion Center, RI

Dear Mr. Krivinskas:

Pursuant to § 7.6 of the NCBC Federal Facility Agreement (FFA), please find attached the Environmental Protection Agency's (EPA) comments on the above referenced document.

The EPA accepts most of the proposed cap components of Alternative 2 with a request that the Navy provide some measure of flexibility in design of the seaward stabilization component. We are looking forward to working with the Navy and the RIDEM to come to consensus on the design of this component. Please call me to arrange a meeting to discuss this issue.

The comments included with this letter include comments on the FFS that also may have implications with regard to the Management of Migration OU. These comments will be explained at the April 13, 1995 groundwater modelling meeting.

Also included are responses to the Navy's responses to the Draft Final RI for Site 9 and to the Draft Detailed Analysis of Alternatives (DAA) for Site 9.

EPA expect the Navy to respond in writing to all comments included. Please contact me at (617) 573-5736, to arrange a meeting to discuss the responses to these comments.

Sincerely,

Christine A.P. Williams  
Remedial Project Manager  
Federal Facilities Superfund Section

Attachments



cc: Richard Gottlieb, RIDEM  
Lou Fayan, NCBC  
Bill Brandon, EPA  
Bob DiBiccaro, EPA  
Jayne Michaud, EPA  
Scot Gnewuch, ADL  
*Yoo-Jean Choi, EPA*

Attachment 1--EPA comments on the Draft Focused Feasibility Study for the Source Control OU at Site 09-Allen Harbor Landfill

**General Comments**

1. The FFS compares the feasibility of two capping alternatives that include a RCRA Subtitle C cap, a slurry wall, and a sheet pile cutoff. The analyses presented in the FFS estimate one component of flow across the landfill site, but do not adequately present a unified description of all flow components. Estimates of leachate flow under present landfill conditions, and proposed remedial action should include a three-dimensional water balance that captures the influence of runoff, as well as lateral, vertical, and cyclical flow components.

As presented, the document does not demonstrate that the proposed action will meet the remedial action objective of preventing the generation of landfill seeps and the migration of contaminated water from such seeps to Allen Harbor or adjacent wetland areas. Therefore as part of the continuing studies, monitoring must be incorporated to determine the effectiveness of the proposed remedy.

2. The Navy is missing the opportunity to dispose of contaminated sediments under the cap with the inclusion of the sediment characterization with the second OU, instead of developing this characterization now.

3. To conserve paper the Navy should copy documents double sided.

4. The existing fencing is not adequate to limit access to the landfill. Additional fencing will be required on the other side of Sanford Road in order to limit access to the landfill.

5. Additional monitoring in the southwestern portion of the landfill will be required to determine the effectiveness of the slurry wall. The groundwater model has shown that there is a potential for contaminant leaching in that part of the landfill.

6. The Focused Feasibility Study should only present the alternatives and **not** make any recommendations. The Proposed Plan is the vehicle for the Navy to make recommendations. Remove Chapter 5 and the last paragraphs in the Executive Summary.

7. Comparative ecological evaluations are not appropriate for inclusion in CERCLA Remedial Investigations. All comparative conclusions must be removed from the text.

8. Marked up ARAR Tables from chapter 4, have been included as an attachment to this comment letter. Tables in Appendix A should also be changed as appropriate. ARAR Tables should be arranged within the Chemical, Location and Action Specific groups by media instead of separated by State and Federal groupings for readability.

Sheet pile lifespan depends on waste characteristics, pH and salt water exposure. The Navy should provide detailed information on how the sheet piles could be protected from the existing chemical environment such as leachate and salt water.

9. Although the presumptive remedy of a landfill cap coupled with vertical barriers appears to be a sound concept, several key issues may affect/refine the final configuration of the system. Firstly, the lack of data concerning the three-dimensional nature of the ground water flow system makes selection of the target depth for the vertical barriers difficult. For example, it is currently unknown whether contamination, particularly DNAPL (free-phase or residual) persists at depths below the silt unit, which is currently identified as the horizon to which the vertical sheetpile barriers will be keyed into. If this is the case, the vertical barriers may need to be placed to greater depths and/or coupled with active ground water pumping from deeper zones. In any case, pumping may be required within the landfill in order to prevent underflow which could result from significant differential head conditions which may develop between the saturated waste within the containment and the surrounding hydrologic system. Conversely, until vertical gradients and tidal effects are understood in greater detail, the potential for upward flow into the waste from deeper aquifers may also limit the effectiveness of the containment system as it is currently outlined. The Management of Migration (MOM) OU should specifically address these issues.

## Specific Comments

10. In the comments below, underlined text immediately following the section references are quotes from the FFS.

11. Pg. ES-1, ¶ last; Management of Migration (MOM) issues; see General Comment No. 9 above.

12. Pg ES-2; Add a sentence stating that the site investigations also determined ecological risks, based on metal uptake in soils and in sediment quality criteria.

13. Pg. ES-3, ¶ 2; MOM OU will need to consider the ground water flow system in three dimensions, considering all lateral, vertical and cyclical (e.g. tidal, seasonal) flow components. The conceptual framework implied by the statement, "upgradient ground water that is causing saturation the landfill mass", is thus an oversimplification.

14. Pg ES-4; 1st and 2nd bullets; See previous comment.

15. Pg ES-4, 3rd bullet; The definition of "seeps" must be expanded to include the potential for groundwater discharge to the harbor below the harbor water level. Surface seeps may also be seasonally or tidally influenced which may explain the inconsistent seep identification during the various phases of site investigation.

16. Pg ES-4 Erosion protection must be provided for the 100-year storm event which is at an elevation of 14 feet NGVD (flood elevation includes wave effects) Provide information on how and from where the 100-year storm (? 100-year tide) elevation was obtained. Explain how wave effects have been reflected on estimation of the 100-year storm elevation..

17. Pg ES-5 Alternative 2; The sheet pile wall along the shoreline of the site extends vertically to an elevation which is one foot higher than the 100-year storm elevation. Provide additional justification for "one foot" as a significant wave height to be considered above the 100-year storm elevation.

18. Pg. ES-5; Alternative 2; How are "upgradient shallow and deep ground water" defined ? Also, please explain the usage of "upper aquifer" in relation to the seaward sheetpile. Why is containment of only the upper aquifer sufficient in this area ?

19. Pg. ES-8; Hotspots, either soils highly contaminated with VOCs and/or groundwater with free phase liquids, may be identified during Phase III RI activities.

20. Table ES-3; The potential for the slurry wall to become more

permeable over time due to contact with saline water is acknowledged. In this respect, specific actions to be taken to monitor this parameter need to be included as part of the remedy.

21. Pg. 1-9, ¶ 2; Is ground water unconfined everywhere in the Davisville area? Even deep ground water? Please clarify this statement.

22. Pg. 2-2, last ¶; Till or gravel above bedrock units and bedrock should be included.

23. Pg. 2-3, ¶ 3; Recent data does not suggest that the silt unit extends to bedrock in all areas of the site. This may be the exception rather than the rule.

24. Pg. 2-3, ¶ 4; Recent data suggests that the topography of the upper bedrock surface, and hence the thicknesses of the overlying units, are different than portrayed here. A revised map should be prepared pending acquisition of the new phase III data.

25. Pg. 2-5, P 1; What are the implications of the negative vertical gradients towards ground water containment? The downward vertical gradients appear to be greater than the horizontal gradients in some cases, although the lack of correlation with tidal events makes generalization difficult. As a further complication, it should be mentioned that the vertical gradients have not yet been established, even in preliminary form, with respect to the bedrock aquifer. Clearly the three-dimensional nature of the ground water flow system is in need of further evaluation, which must also consider cyclical effects (see General Comment No. 9). This effort is an essential for the management of migration OU and may also affect the final design for the containment OU.

26. Pg. 2-8, ¶ 3 & 4; Due to the overall significance of the 09-MW7 area, the tidal ground water monitoring evaluation should be repeated to include monitoring points inclusive of the 09-MW7 area. This effort should take into account the improved understanding of the site hydrostratigraphy following phase III data acquisition and should be repeated in the event of equipment failures. Revised aquifer thicknesses, vertical gradients, etc. should be reviewed. If appropriate, ground water models should be accordingly revised.

27. Section 2.0      **Subsection 2.3.3 - Tidal Effects, p. 2-9, 2nd Paragraph, 1st Sentence;** The designer has based the flow velocities on the mean water levels derived from tidal monitoring. Although these values may give reasonable values for the net flow crossing the site, they understate the gross outflow from the landfill mass.

28. During each low-tide to high-tide cycle, the shallow monitoring wells indicate an increase in the water level

corresponding to a rise in the surrounding phreatic surface. The volume of water that enters the landfill mass equals the volume between the low phreatic surface and the high phreatic surface multiplied by the specific yield, or effective porosity, of the soil. For the silty sand with an effective porosity of 0.20 (Table 2-6), each 1-foot average rise over the 15-acre landfill adds 130,680 ft<sup>3</sup> of water. When the tide falls, the same amount of water flows out of the aquifer. This process occurs twice in each lunar day.

Some percentage of this tidal flux remains within the perimeter of the landfill, rising and falling essentially vertically, but the remainder flows laterally out of the landfill area. Even if only 1 percent of the volume escapes on each tidal cycle, the daily outflow of potentially contaminated ground water from tidal effects exceeds the total outflow shown in Table 2-7.

29. The designer should quantify the cyclic tidal discharge of pore fluid from the landfill for this OU and assess the risk associated with such discharges, in the management of migration OU.

30. Pg. 2-9, 2nd ¶, Section 2.2.3 - Tidal effects; The report should quantify the total outflow of leachate from the landfill system in consideration of the tidally-induced ground water flux. This analysis should assess the risk associated with these discharges (i.e. human health concern and non-cancer risks) in consideration of potential contaminant variability with respect to tidal cycle. (Additional comments on this theme are included further on in this comment document.)

31. Table 2-7; The Darcy formula for volumetric flux is  $Q = KiA$ , not  $Q = (Ki/n)/A$ . Flow should be recalculated using the correct equation.

32. Table 2-7; The designer has not defined the geometries of the flow prisms well enough to permit verification of the flow calculations. The designer should provide a plan view with the flow prisms shown, preferably with the gradients, permeabilities, and prism heights indicated. To more completely define the flow regime, the designer should include prisms that contribute flow into the landfill area.

33. Pg. 2-10, ¶ 1; Is the identification of surface seeps dependent on position within the tidal cycle (i.e. harbor water level) ? Has this potential relationship been explored ?

34. Table 2-10; The Darcy formula for volumetric flux is  $Q = KiA$ , not  $Q = (Ki/n)/A$ . Flow should be recalculated using the correct equation.

35. Table 2-10; The designer has not defined the geometries of the flow prisms well enough to permit verification of the flow

calculations. The designer should provide a plan view with the flow prisms shown, preferably with the gradients, permeabilities, and prism heights indicated. To more completely define the flow regime, the designer should include prisms that contribute flow into the landfill area.

36. Page 2-12, first paragraph; Add information on the use of the site by the endangered species.

37. Page 2-16, Subsurface soils; Add information as to how the spill from the drum was cleaned up.

38. Pg. 2-18, ¶ 3, Leachate; See comment number 35.

39. Pg. 2-18, ¶ 5, Surface Water; Please explain "area of tidal influence" in greater detail. Does this suggest a sub-harbor level seep location ?

40. Pg. 2-29 to 2-30; Comparison of shallow and deep monitoring well pairs points to general contaminant trends with respect to high and low tide in some (if not all) areas of the site. For example, in some of the wells examined, contaminant values were higher during high tide sampling events (e.g. 09-MW9S); in contrast other locations (i.e. 09-MW7D and 09-MW9D) detected higher contaminant values during the low tide sampling event. These findings are significant with respect to risk evaluation that will be revised in the Management of Migration OU. In order to accurately assess contaminants and thus risk (particularly human health cancer and non-cancer risk), this data suggests that the sampling effort must be correlated to the appropriate tidal cycle. In this respect, ground water/surface water data from sampling episodes prior to the Supplemental Phase II RI should be reexamined with respect to tidal cycle. Data which does not correspond to the appropriate portion of the tidal cycle demonstrated to correspond to maximum contaminant values should not be used to establish contaminant ranges or maxima for a particular location.

In general, these findings demonstrate the complexity of the site hydrology with respect to the tidal cycle and underscore the need to evaluate this complex system in three dimensions in consideration of cyclical variability. Once the hydrologic relationship between the site ground water and the Harbor is understood in 3-D, it may be appropriate to calculate risk in consideration of the tidal cycle. For example, total risk values may be more accurately represented by a summation of high tide values with the corresponding low tide values. This may create a more realistic picture of the aggregate risk over the complete tidal cycle rather than a simplistic averaging of risk based on contaminant values from ground water conditions at "mean" tidal values. In other words, any analysis of risk that doesn't consider tidal stage position in surface and ground water sample variability is suspect as it offers the potential to misrepresent contaminant



levels and the resultant risk levels.

41. Pg. 2-32, last para.; The text states that "contaminant exposures and biological effects were often most severe in the southern end of the harbor, farthest removed from the landfill and Calf Pasture Point." Were water current patterns within Allen Harbor examined? Perhaps this could explain this odd distribution given the fact that disposal at the landfill and Calf Pasture Point are the most likely sources for contaminants. It should also be added that the majority of saturated waste occurs in the southern portion of the landfill.

42. Page 2-32, first paragraph; The last sentence and other such comparative statements should be removed from this FFS. Comparative Risk is not appropriate for Remedial Investigations.

43. Pg. 2-37, p.1; The "flow prism" approach used for ground water/contaminant flux calculation is overly simplistic in that it does not consider tidal effects and ground water flow in three dimensions.

44. Page 2-37, first paragraph; The quantification of flux entering the harbor after capping must be used in the HHRA and ERA for the Management of Migration OU.

45. Page 2-42, second paragraph; Add a sentence after the fifth sentence, "When these chemicals are segregated by health effect, the total HIs are less than one."

46. Page 2-43, first full paragraph; Replace "pathways" in the first sentence with "shellfish species".

47. Page 2-43, second paragraph; change to read "Additional evaluation of potential risks to human health (via shell fish consumption, various sediment pathways and various ground water pathways) will be conducted based on the results of the Phase III RI.

48. Page 2-44, first paragraph; There should be some information ad that ecological risks were noted due to surface soils. Remove all comparative statements.

49. Figures 2-3, 2-4, 2-5; Preliminary Phase III RI data suggests that the configuration of the top-of-bedrock surface, as depicted in these cross sections is not accurate. Corrected cross sections should be constructed which reflect the most up to date knowledge of site's multi-aquifer configuration, but which also extend beyond the limits of the landfill footprint so that visualization of the landfill and proposed remedial measures (i.e cap and vertical barriers) can be made in the context of the surrounding harbor and wetlands.

50. Pg. 3-4; Presumptive remedy selection should proceed on the basis of definitions for "upgradient ground water" and "seeps" which are based on a thorough understanding of the site hydrology in three dimensions including the tidal dynamics.

51. Page 3-12 2) Assumed factor of 5 increase in the permeability of the slurry wall due to exposure to salt water. The Navy should verify the permeability of the proposed slurry mixtures using real materials during the design stage.

52. Section 4.0, Subsection 4.3.1 - Alternative Description, p. 4-5, last full Paragraph; Information should be provided on the proposed groundwater monitoring.

53. Pg. 4-5, Section 4.3.1; The rationale for placing a slurry wall barrier along Sanford Road to the depth of bedrock while placing the sheetpile wall only to the depth of the silt layer is not clear. In terms of inflow potential to the landfill area, the use of the term "upgradient" ground water is misleading in this system since it does not appear to accurately reflect the radial ground water flow within the upper aquifer, or variability of flow gradient vectors in the deeper aquifer due to tidal effects, upward vertical gradients, etc.

54. Pages 4-6 and 4-7 Second Bullet - Geonet drainage layer

Change "Geonet drainage layer" to "Geocomposite drainage layer". The geocomposite drainage layer should be composed of the geotextile bonded to geonet on both sides.

55. Pages 4-6 and 4-7 Third Bullet - Geocomposite barrier layer Change "Geocomposite barrier layer" to "Low permeability layer (geomembrane/compacted clay layer or geomembrane/geosynthetic clay liner)". The recommended geomembranes are PVC or LDPE with a minimum thickness of 40 mils. A HDPE geomembrane is not recommended for the landfill final cover due to its lack of flexibility.

56. Section 4.0, Subsection 4.3.1 - Alternative Description, p. 4-8, 1st Paragraph; To install a geomembrane to which a GCL layer has been permanently fused, membrane sections are ... overlapped 3 to 12 inches. Because the sheets are not permanently seamed together, vertical and horizontal movement do not result in the tearing which can be associated with similar movement in a seamed geomembrane material.

The movement does not result in tearing because the overlapped sheets can relieve tensile stresses by moving relative to each other. The designer must show that the expected movement of the sheets does not compromise the effectiveness of the hydraulic barriers.

57. Page 4-8 Combined geocomposite barrier...permanently fused...

The long term integrity of the fused bentonite beneath the geomembrane due to heat, temperature, gas condensates, dry-wet cycles, landfill settlements... is very questionable. Unless the bentonite is fully hydrated and contained, it is difficult to maintain the low permeability. The use of the proposed geocomposite barrier is not recommended.

58. Subsection 4.3.1 - Alternative Description, p. 4-9, 1st Paragraph, 5th Sentence; ... a portion of this cap would be inundated during the 100 year flood (elevation of 14.0 feet NGVD)

The design should terminate existing monitoring wells and future gas venting system risers above the flood level or else contain design features that prevent the entrance of surface waters into the well casings and riser pipes.

59. Pg. 4-10; (Slurry wall);

In general, the effectiveness of any vertical barrier system design will be dependent on the system as viewed as a whole. It is not clear whether or not a slurry wall placed to bedrock will prevent deep upgradient ground water from flowing into the landfill area since knowledge of the hydraulic connection between the bedrock aquifer and the overlying materials is not yet known. Further, if the upgradient flow is "diverted around the landfill", is it prevented from upwelling into the waste where the slurry wall is intersected by the shallower sheetpile ? Further, analysis presented in this report suggests that deep ground water is affected more greatly than shallow ground water by tidal fluctuations. The tidal variability may render the "upgradient" protection offered by the deep slurry wall ineffective. For example, Figure 2-9 shows deep ground water flowing toward the center of the landfill from the north and south respectively. It is doubtful that a slurry wall located along Sanford Road would prevent deep ground water in this flow scenario from entering the landfill. Conversely, ignoring any potential connection with the bedrock aquifer, if containment of leachate within the confines of the landfill is better achieved with the deeper slurry wall, perhaps a deeper sheetpile application (i.e. to bedrock) is warranted.

60. Section 4.0, Subsection 4.3.1 - Alternative Description, p. 4-11, 2nd Paragraph, (cont.) 2nd Sentence; Excavated material, ..., is mixed with the slurry, typically through the use of a bulldozer.

The mixing procedure must produce a uniform backfill material to avoid gaps in the slurry wall seepage barrier. Mixing with a bulldozer may prove unsatisfactory.

61. Pg. 4-13; Leachate collection needs to be addressed in the management of migration OU.

62. Pg. 4-13; Ground water monitoring should be expanded beyond the current monitoring well network in order to specifically address ongoing evaluation of the integrity and effectiveness of the cap/vertical barrier system.

63. Section 4.0, Subsection 4.3.1 - Alternative Description, p. 4-13, last paragraph; Provide more information on the monitoring, especially to determine the effectiveness of the cap/slurry wall/sheet pile containment system in the south western portion of the landfill.

64. Subsection 4.4.1 - Alternative Description, p. 4-20, 2nd Paragraph, 1st Sentence; A bedding layer underlies the gas venting layer and consists of a 6-inch layer of soil ...

Why has the Navy reduced the thickness of the bedding layer on the 3:1 slopes to 6 inches, while specifying 12 inches of bedding material for other cap areas?

65. Subsection 4.4.1 - Alternative Description, p. 4-21, 1st Paragraph, 3rd Sentence; The design of the sheet pile wall would require re-evaluation to confirm that it could support the weight of the revetment and slope behind it.

Compared to Alternative 2, the removal of soil behind the sheet pile wall will reduce the loads on the wall.

66. Subsection 4.4.2 - Alternative Evaluation page 4-24; provide more information as to how the revetment would compromise the integrity of the cap and what the effects of the inundation would be. Also define how drainage from the drainage layer in either alternative would be accomplished around/through the sheet pile wall.

67. Subsection 4.5 - Comparative Evaluation of Alternatives; The Navy should consider sheet pile wall heights between those indicated in Alternatives 2 and 3 and one sloped to the shoreline. An intermediate wall height with a shorter 3:1 slope would reduce some of the short-term risks associated with Alternative 3, enhance structural stability against potential settlement and wave action. Also this compromise position may reduce the length of time the cap is inundated and reduce the repair considerations. A cap sloped to the shoreline would come closer to fulfilling CRMC's preference for using non-structural erosion control methods in shoreline applications.

#### Appendix A

68. Appendix A, page A-6; the soils at the landfill exhibited the

toxic characteristic of lead and cadmium based on the TCLP, therefore Condition A is met.

#### Appendix D

69. Pg. D-1; Please discuss the basis for the vertical leakance value used in the modeling effort.

70. Pg. D-2; Was a sensitivity analysis conducted? To what degree does altering the constant head boundaries, as can be expected due to tidal fluctuations, affect model calibration.

71. Pg. D-7; Did the model consider the possibility of underflow into (or out of) the landfill along the sheetpile wall, particularly near the intersection of the deeper slurry wall? The tidal cycle would be expected to accentuate this potential.

72. Pg. D-9 through D-11; Please briefly discuss the potential for proposed remedies (Scenarios 1, 2, 3) to potentially flood (or de-water) the wetland area west of Sanford Road?

73. Please expand the comparative discussion of the three modelled scenarios to address not only the relative differences of water level decreases in the upper aquifer, but also in terms of the absolute decreases for each simulation as compared with the initial steady state values. More importantly, please discuss the amount of waste that is estimated to be de-watered and to remain saturated following implementation of each of the scenarios.

Attachment 2--Navy Responsiveness to EPA Comments in April 29  
Comment letter

The following identifies those EPA comments that the Navy said they would address in the FFS, but did not. The comments were originally presented in a letter from EPA to the Navy, dated April 29, 1994. The responses were presented by the Navy in a document entitled: Navy Responses to USEPA - New England Comments Draft Detailed Analysis of Alternatives (DAA) U.S. Navy - NCBC Davisville, Rhode Island, Site 09 - Allen Harbor Landfill. The following numbers refer to those responses presented in this document.

**General**

**Comment #4** This evaluation will be described within the FFS.

The evaluation was not included in the FFS.

**General**

**Comment #9** EA slope stability design calculations will be included as an appendix within the FFS.

The calculations were not included in the FFS.

**Specific**

**Comment #1** This evaluation of potential settlement will be presented within the FFS.

The evaluation of potential settlement was not presented in the FFS.

Attachment 3--Navy's Responses to Region I Comments, dated August 9, 1994, on Draft Final RI Report

Overall, the Navy's responses to EPA's human health risk assessment comments are satisfactory and address our concerns. However, a few places need clarification or emphasis.

1. Navy's response to Comment 1, they cite a section of EPA "RAGS" Part C guidance on "Risk Evaluation of Remedial Alternatives" which states that a qualitative assessment of worker risk is appropriate for most sites during the FS. This section of the guidance pertains to the evaluation of short-term worker risks. EPA's guidance also discusses situations where quantitative risk evaluations would be warranted in the FS (page 14 of the guidance). As the Navy has noted, a human health concern during excavation/remediation activities is exposure to volatile compounds. Due to the close proximity of the marina, there is a potential for off-site human exposures via inhalation. This potential human exposure pathway should be evaluated.

Will air monitoring be part of the remedial plan? If not, it should be for health and safety purposes.

2. Comment 2 (from 8/94) deals with human exposures to sediment. I agree that the Navy should investigate the potential for the area near the landfill to be used by swimmers and waders under current site conditions. However, as stated in the June 1994 RI, the future recreational scenario assumes that the area will have open access to the public for recreational uses (p-12). Therefore, future exposures to sediment for wading children should be quantitatively assessed.

The information the Navy obtains on the uses of the harbor area in the vicinity of the landfill will be useful to an evaluation of the uncertainties associated with the future wading child scenario.

3. Response 4; The figures provided do not have narrow enough contours to gather needed information.

#### Attachment 4--Changes to Tables 4-1 through 4-3--ARAR Tables

This attachment should be used in conjunction with the marked up ARAR tables provided.

Insert A-Replace Action taken to meet ARAR with the following insert for Executive Order 11988 and 1190

There is no practicable alternative that will have less adverse impact on wetlands and the floodplain. Therefore, these remedial actions will be designed and conducted so that impacts to wetlands and floodplains will be minimized and mitigated.

Insert B-Replace Synopsis with the following insert for Endangered Species Act

Remedial actions may not jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their critical habitats.

Insert C-Replace Action to Meet ARAR with the following insert for Endangered Species Act

Grasshopper sparrows, upland sandpipers and the least tern have been identified in the general area of the Allen Harbor Landfill, although not specifically on the landfill or the adjacent wetlands. If any of these species are identified on the landfill or the adjacent wetland, appropriate measures will be taken during construction to ensure that the remedial action does not adversely affect the species or its habitat. In addition, the final cap may provide habitat for these species.

Insert D-Replace Action to Meet ARAR with the following insert for Rhode Island Wetlands Laws

If cap construction, slurry wall, or shoreline protection impact a freshwater wetland, appropriate mitigation measures will be developed and implemented to prevent disturbance or destruction of the wetland.

E.

Table 4-3, Capping/Monitoring -- Note that the general RCRA provision (the first entry on page) should be deleted. The abbreviation "RCRA" should be inserted before each of the next



three entries.

F.

The RCRA subparts B, C, & D, shown on the next page, should be added. Insert the abbreviation "RCRA" before each one in the left column. The right column of each should be revised to state:

The substantive provisions of this regulation will be met if the remedial action addresses a waste . . . . as defined by RCRA.

G.

Note that the Rhode Island Wetland Laws should go in the location-specific section and be removed from the action-specific section.

Insert H. (add to synopsis of RI Haz Waste Mgt Act of 1978 )

They incorporate by reference the relevant and appropriate Federal RCRA requirements set forth above.

Insert I. (new synopsis for Section 8)

Contains requirements for landfill closure, groundwater monitoring, general waste analysis, security procedures, inspections, safety, and training.

Insert J. (new synopsis for Section 9)

Contains operational requirements for treatment, storage and disposal facilities, including proper management and conditions for tanks, groundwater monitoring, inspections, training, preparedness and prevention, and contingency planning and emergency procedures.

Insert K. In Section 10 synopsis, replace the word "outlines" with the word "Contains".

NORTHNAVFACENGCOM ENVIRONMENTAL  
10 INDUSTRIAL HWY MAIL STOP 82  
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from:

ROBERT KRIVINSKAS  
REMEDIAL PROJECT MANAGER  
(610) 595-0567 x134

10 Apr 95

to:

EA ENG/N. LANNEY  
TRC EC/J. OLIVA

cover & 13 pages

a) ATTACHED:

EPA ATTACHMENT 5, ARAR TABLE MARK-UP, TO APRIL 4 LETTER,  
COMMENTS ON FFS SITE 9 DAVISVILLE.

b) DISCUSSION:

I RECEIVED THIS FRIDAY, 7 APR.

BOB

TABLE 4-1  
FEDERAL AND STATE LOCATION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 1 - NO ACTION  
SITE 09 - ALLEN HARBOR LANDFILL

*Action to meet ARAR*

MEDIA	REQUIREMENT	STATUS	SYNOPSIS	APPLICABILITY TO SITE CONDITIONS
<b>FEDERAL</b>				
<b>Wetlands/Water Resources--</b>				
	Executive Order 11988 and 11990; Statement on Proceedings of Floodplain Management and Wetlands Protection (40 CFR 6, Appendix A)	Applicable	Requires action to avoid whenever possible the long- and short-term impacts associated with the destruction of wetlands and the occupancy and modifications of floodplains and wetlands whenever there is a practicable alternative which promotes the preservation and restoration of the natural and beneficial values of wetlands and floodplains.	Since this alternative does not impact coastal or on-shore wetland areas, it meets this ARAR.
	Clean Water Act Section 404 (40 CFR 230.10) Requirements for Discharge of Dredge or Fill Material and Rivers and Harbors Act (Section 10) Prohibition of Filling a Navigable Water	Applicable	Prohibits the discharge of dredged or fill material to a water of the United States if there is a practicable alternative which poses less of an adverse impact on the aquatic ecosystem or if it causes significant degradation of the water. Rivers and Harbors Act prevents filling of a navigable water.	Although this alternative does not impact wetlands and waters, it could allow continued contamination and therefore does not meet this ARAR.
	Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661) Protection of Wildlife Habitats	Applicable	Requires consultation with federal and state conservation agencies during planning and decision-making process which may impact water bodies, including wetlands. Measures to prevent, mitigate or compensate for losses of fish and wildlife will be given due consideration whenever a modification of a water body is proposed.	Since this alternative does not result in an impact to a water body, consultation with U.S. Fish and Wildlife Service, RIDEM, and other federal and state agencies involved in fish and wildlife matters is not required.

Attachment 5

TABLE 4-1 (continued)  
FEDERAL AND STATE LOCATION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 1 - NO ACTION  
SITE 09 - ALLEN HARBOR LANDFILL

MEDIA	REQUIREMENT	STATUS	SYNOPSIS	APPLICABILITY TO SITE CONDITIONS
Coastal Zones--	Coastal Zone Management Act (16 USC Section 1451 et seq.)	Applicable	Regulates activities affecting the coastal zone including lands thereunder and adjacent shoreline.	Since this alternative does not involve an active remedial action in a coastal zone, it does not require a determination that all activities are consistent to the maximum extent practicable with State Coastal Zone Management Plan.
Endangered Species--	Endangered Species Act of 1973 (16 U.S.C. 1531) Protection of Endangered Species	Applicable	Restricts activities in areas inhabited by registered endangered species.	This alternative does not impact existing habitat, <del>if determined to be suitable for potential species.</del>
<u>STATE</u> Wetlands--	Rhode Island Wetlands Laws (RIGL 2-1-18 et seq.); Rhode Island Department of Environmental Management Rules Governing the Enforcement of the Freshwater Wetlands Act - as amended, Dec. 21, 1986.	Applicable	Defines and establishes provisions for the protection of swamps, marshes and other freshwater wetlands in the state. Actions required to prevent the undesirable drainage, excavation, filling, alteration, encroachment or any other form of disturbance or destruction to a wetland.	This alternative does not impact a wetland area; however, it could allow continued contamination of wetland areas and therefore does not meet this ARAR.
Coastal Zone--	Rhode Island Coastal Resources Management Law, (RIGL, Title 46, Chapter 23) and Regulations	Applicable	Creates Coastal Resources Management Council and sets standards and authorizes promulgation of regulations for management and protection of coastal resources.	Since this alternative does not involve an active remedial action, it does not require coordination with the Rhode Island Coastal Resources Management Council.

*Action to meet ARAR*

*Revise in accordance with comment B*

*Delete*

TABLE 4-2  
FEDERAL AND STATE LOCATION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER  
CAP, SLURRY WALL, SHEET PILE WALL STORM PROTECTION,  
AND DEED RESTRICTIONS  
SITE 09 - ALLEN HARBOR LANDFILL

*and Alt 3*

*Action to Meet ARAR*

MEDIA	REQUIREMENT	STATUS	SYNOPSIS	APPLICABILITY TO SITE CONDITIONS
<b>FEDERAL</b>				
<b>Wetlands/Water Resources--</b>				
	Executive Order 11988 and 11990; Statement on Proceedings of Floodplain Management and Wetlands Protection (40 CFR 6, Appendix A)	Applicable	Requires action to avoid whenever possible the long- and short-term impacts associated with the destruction of wetlands and the occupancy and modifications of floodplains and wetlands whenever there is a practicable alternative which promotes the preservation and restoration of the natural and beneficial values of wetlands and floodplains.	Will be applicable if cap construction, slurry wall or shoreline protection impact coastal or on-shore wetland areas.  <i>Revise in accordance with comment A</i>
	Clean Water Act Section 404 (40 CFR 230.10) Requirements for Discharge of Dredge or Fill Material and Rivers and Harbors Act (Section 10) Prohibition of Filling a Navigable Water	Applicable	Prohibits the discharge of dredged or fill material to a water of the United States if there is a practicable alternative which poses less of an adverse impact on the aquatic ecosystem or if it causes significant degradation of the water. Rivers and Harbors Act prevents filling of a navigable water.	Applicable if cap construction or shoreline protection impact wetlands and waters, or cause degradation of water. If construction cannot be limited to within toeprint of existing landfill, mitigation of impacted wetlands may be required.
	Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661) Protection of Wildlife Habitats	Applicable	Requires consultation with federal and state conservation agencies during planning and decision-making process which may impact water bodies, including wetlands. Measures to prevent, mitigate or compensate for losses of fish and wildlife will be given due consideration whenever a modification of a water body is proposed.	ARAR for cap construction if it impacts Allen Harbor, and for shoreline protection.

TABLE 4-2 (continued)  
FEDERAL AND STATE LOCATION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER  
CAP, SLURRY WALL, SHEET PILE WALL STORM PROTECTION,  
AND DEED RESTRICTIONS  
SITE 09 - ALLEN HARBOR LANDFILL

and Alt 3

Action taken to meet AOCAR

MEDIA	REQUIREMENT	STATUS	SYNOPSIS	APPLICABILITY TO SITE CONDITIONS
Endangered Species--	Endangered Species Act of 1973 (16 U.S.C. 1531) Protection of Endangered Species	Applicable	<p><i>Revise in accordance with (IAW) comment B</i></p> <p>Restricts activities in areas inhabited by registered endangered species.</p>	<p><i>Revise IAW comment C</i></p> <p>ARAR for cap construction and shoreline protection. Grassy terrain provided by final cap could provide additional habitat for Grasshopper Sparrows and Upland Sandpipers.</p>
<del>Coastal Zones--</del>	<del>Coastal Zone Management Act (16 USC Section 1451 et seq.)</del>	<del>Applicable</del>	<del>Regulates activities affecting the coastal zone including lands thereunder and adjacent shoreline.</del>	<del>ARAR for cap construction and shoreline protection.</del>
STATE Wetlands--	Rhode Island Wetlands Laws (RIGL 2-1-18 et seq.); Rhode Island Department of Environmental Management Rules Governing the Enforcement of the Freshwater Wetlands Act - as amended, Dec. 21, 1986.	Applicable	Defines and establishes provisions for the protection of swamps, marshes and other freshwater wetlands and adjacent land in the state. Requires actions to prevent the undesirable drainage, excavation, filling, alteration, encroachment or any other form of disturbance or destruction to a wetland.	<p>Will be applicable if cap construction, slurry wall construction, or shoreline protection impact a freshwater wetland area.</p> <p><i>Revise IAW comment D</i></p>

Delete

TABLE 4-3  
FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
<b>FEDERAL</b>				
<u>Drainage/</u> <u>Discharge/</u> <u>Hydraulic</u> <u>Control</u>	<del>Clean Water Act (40 CFR</del> 122-125) National Pollutant Discharge Elimination System (NPDES) Permit Requirements	Applicable	Permits contain applicable effluent standards (i.e. technology- and/or water quality-based), monitoring requirements, and standards and special conditions for discharges, including storm water discharges from land disposal facilities which have received industrial waste from industrial facilities.	The State of Rhode Island has been delegated authority by USEPA for the NPDES program. Therefore, any storm water drainage improvements would be designed to provide compliance with RPDES regulations and drainage would be monitored in compliance with RPDES regulations.
	Clean Water Act (40 CFR 121) Ambient Water Quality Criteria (AWQC)	Relevant and Appropriate	Non-enforceable guidelines established for the protection of human health and/or aquatic organisms. These guidelines are used by states to set water quality standards for surface water.	AWQC will be relevant and appropriate to the development of discharge criteria for storm water as described above.
<u>Capping/</u> <u>Monitoring</u>	<del>Migratory Bird Treaty Act</del> (16 U.S.C. 703-712)	Applicable	Prohibits hunting, possessing, killing, or capturing of migratory birds, birds in danger of extinction, and those birds' eggs or nests.	Since construction activities during the breeding season may "take" birds or their nests, actions must be taken to avoid destroying nests during breeding season.
	Clean Water Act Section 404 (40 CFR 230.10) Requirements for Discharge of Dredged or Fill Material and Rivers and Harbors Act (Section 10) Prohibition of Wetland Filling	Applicable	Prohibits the discharge of dredged or fill material to waters of the United States unless no other practical alternatives are available which pose less of an adverse impact on the aquatic ecosystem or if it causes significant degradation of the water. Rivers and Harbors Act prevents filling of a navigable water.	If sheet pile wall construction cannot be limited to areas within the toeprint of the existing landfill, mitigation of any impacted wetlands may be required.

*Delete these*  
**3**

TABLE 4-3 (continued)  
FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
Capping/ Monitoring (cont.)	RCRA (40 CFR 264) Subtitle C Requirements:	Relevant and Appropriate	Outlines specifications and standards for design, operation, closure and monitoring of performance for hazardous waste storage, treatment and disposal facilities.	Substantive RCRA requirements will be met and adhered to on-site if appropriate to capping
<i>Add</i>	<i>RCRA IAW Comment E</i> 40 CFR 264.90-254.101 Subpart F - Ground Water Protection	Relevant and Appropriate	Ground water monitoring/corrective action requirements; dictates adherence to MCLs unless ACLS are appropriate and establishes points of compliance.	Monitoring standards will be met through the implementation of ground water monitoring in conjunction with the management of migration operable unit.
	<i>RCRA</i> 40 CFR 264.110-118 Subpart G - Closure/Post Closure Requirements	Relevant and Appropriate	Establishes requirements for the closure and long-term management of a hazardous disposal facility.	Relevant and appropriate closure/post closure standards and requirements will be met.
	<i>RCRA</i> 40 CFR 264.303-264.310; Subpart N - Landfill Requirements	Relevant and Appropriate	Placement of cap over hazardous waste requires a cover designed and constructed to comply with regulations. Installation of final cover to provide long-term minimization of infiltration. Restricts post-closure use of property as necessary to prevent damage to cover.	Cap design meets relevant and appropriate requirements. Cap maintenance, closure and post-closure substantive requirements will be met.
	RCRA Proposed Rule 52 FR 8712, 53 FR 51446 Proposed Amendments for Landfill Closures	To Be Considered	Provides an option for the application of alternate closure and post-closure requirements based on a consideration of site-specific conditions including exposure pathways of concern.	Cap and post-closure monitoring designs take into account exposure pathways of concern.
	EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments (EPA 530-SW-89-047)	To Be Considered	EPA Technical Guidance for landfill covers. Presents recommended technical specifications for multilayer landfill cover design.	These standards <del>were</del> <i>will be</i> considered in development of the cap design. Cap construction <del>should</del> <i>will</i> conform to these standards.

*Delete*



TABLE 4-3 (continued)  
FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
<u>Venting/ Discharges to Air</u>	Clean Air Act (40 CFR 60) New Source Performance Standards (NSPS) Proposed Subpart WWW 56 FR 24468- 24528 (5/30/91)	<del>Relevant and Appropriate</del>  TBC	Requires Best Demonstrated Technology (BDT) for new sources, and sets emissions limitations. Proposed Subpart WWW sets a performance standard for non-methane organic compounds (NMOC) emissions of 150 Mg/yr (167 tpy) for existing municipal solid waste landfills.	This standard will be met by the landfill gas venting system, if the threshold of the standard is exceeded
	Clean Air Act (40 CFR 61) National Emissions Standards for Hazardous Pollutants (NESHAP)	To Be Considered	Establishes <del>emissions limitations</del> for hazardous air pollutants and sets forth regulated sources of those pollutants.	Although EPA has not promulgated final Maximum Achievable Control Technology (MACT) standards for municipal landfills, the lead agency should use air control technology to control emissions of hazardous air pollutants. MACT standards prescribe technology that is used by the best 12% of industries in the source category. This standard will be met by the landfill gas venting system.
	Clean Air Act, Section 5 171 through 178, 42 USC §§ 7471-7478 (Requirements for Non-Attainment Areas)	Applicable or Relevant and Appropriate (Depending on Modeling Results)	RI has adopted State Implementation Plan (SIP) requirements approved and enforceable by EPA which meet the New Source Review (NSR) requirement of the CAA. These provisions require that new or modified major sources of VOCs, (defined as a source which has the potential to emit 50 tpy) install equipment to meet Lowest Available Emissions Rate (LAER), which is set on a case-by-case basis and is either the most stringent emissions limitation contained in any SIP for that category or source or the most stringent emissions limitation which is achieved for the source. NSR requirements apply to non-attainment pollutants, which are VOCs and NO <sub>x</sub> in RI.	If modeling indicates that the <sup>thresholds</sup> requirements of this standard are <del>applicable or relevant and appropriate</del> based on the emissions levels <del>and on the need to be protective of human health and the environment</del> , the requirements of this standard will be met. exceeded

Delete

TABLE 4-3 (continued)  
 FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
 ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
 ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
 SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
<u>Venting/ Discharges to Air (cont.)</u>	Clean Air Act, Section 5 160 through 169A - Prevention of Significant Deterioration Provisions	Applicable or Relevant and Appropriate (Depending on Modeling Results)	RI has adopted SIP requirements approved and enforceable by EPA which meet the Prevention of Significant Deterioration (PSD) requirements of the CAA. These provisions require that new or modified major sources of VOCs, defined as a source which has the potential to emit 25 tons/year, install equipment to meet Best Available Control Technology (BACT). PSD requirements apply to attainment pollutants, which are SO <sub>2</sub> , CO, lead and particulates in Rhode Island.	If modeling indicates that the <del>requirements</del> <sup>threshold</sup> of this standard are <del>applicable or relevant and</del> <sup>exceeded</sup> <del>appropriate</del> based on the emissions levels, the requirements of this standard will be met.
<u>STATE Drainage/ Discharge/ Hydraulic Control</u>	RI Water Pollution Control Act			
	<ul style="list-style-type: none"> <li>RI Water Quality Regulations for Water Pollution Control (RIGL 46-12, et seq.) RI Water Quality Standards</li> </ul>	Applicable	Establishes general requirements and effluent limits for discharge to area waters.	In compliance with these regulations, RIPDES requirements pertaining to storm water discharges would be met.
	<ul style="list-style-type: none"> <li>Regulations for the RI Pollutant Discharge Elimination System (RIPDES) (RIGL 46-12, et seq.)</li> </ul>	Applicable	Permits contain applicable effluent (i.e. technology - based and/or water quality - based), monitoring requirements, and standards and special conditions for discharges, including storm water discharges from land disposal facilities which have received industrial waste.	Storm water discharge improvements would be designed to provide compliance with these regulations and drainage/discharge would be monitored in compliance with these regulations.

TABLE 4-3 (continued)  
 FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
 ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
 ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
 SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
STATE <u>Drainage/</u> <u>Discharge/</u> <u>Hydraulic</u> <u>Control</u> (cont.)	Rhode Island Wetlands Laws (RIGL 2-1-18 et seq.); Rhode Island Department of Environmental Management Rules Governing the Enforcement of the Fresh-water Wetlands Act - as amended, Dec. 21, 1986.			
	• Section 7.02	Applicable	States that the impacts of any changes in drainage in a wetland area must be assessed.	Impact of landfill cap and hydraulic containment features on fresh water wetland areas will be assessed <i>and mitigated if impacts are found.</i>
	• Section 7.03	Applicable	Requires that flood storage capacity be maintained at a site.	Impact of slurry wall construction on ground water elevations in fresh water wetland areas will be assessed to <del>determine if</del> <sup>ensure that</sup> flood storage capacity <del>is</del> <sup>will be</sup> maintained.
	• Section 7.04	Applicable	Requires implementation of sediment controls and surface water discharge controls to minimize sedimentation of wetland areas.	Construction runoff control methods and final cap drainage control methods will be designed to minimize sediment runoff.

*These three sections should be moved to table 4-2 Location Specific ARARs I.A.W Comment G*

TABLE 4-3 (continued)  
 FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
 ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
 ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
 SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
<u>Capping/ Monitoring</u>	RI Hazardous Waste Management Act of 1978 (RIGL 23-19.1 et seq.) Hazardous Waste Management Rules and Regulations	Relevant and Appropriate	Rules and regulations for hazardous waste generation, transportation, treatment, storage and disposal. <b>(H)</b>	Substantive requirements applicable to closure will be met and adhered to on-site.
	• Section 7	Relevant and Appropriate	Restricts location, design, construction, and operation of landfills from endangering ground water, wetlands or floodplains.	Remedial actions will be designed so as to prevent contamination of ground water, wetlands, or floodplains to the maximum extent practicable.
	• Section 8	Relevant and Appropriate	Outlines requirements for ground water protection, general waste analysis, security procedures, inspections and safety. <i>Revise per I</i>	Remedial actions will comply with substantive portions of this section applicable to landfill closure.
	• Section 9	Relevant and Appropriate	Outlines operational requirements for treatment, storage and disposal facilities. <i>Revise per comment J</i>	Remedial actions, including ground water monitoring, will comply with substantive portions of this section applicable to landfill closure.
	• Section 10	Relevant and Appropriate	<del>Outlines</del> <i>Continues</i> Outlines design and operations requirements for land disposal facilities, including landfills.	Remedial actions will meet all non-location specific requirements of this section applicable to landfill closure.
	RI Refuse Disposal Law Rules and Regulations for Solid Waste Management Facilities			
	• Section 14.12	Relevant and Appropriate	Sets performance standard for landfill covers of maximum remolded permeability of $1 \times 10^{-7}$ cm/sec.	Design of landfill cover will meet this requirement.

TABLE 4-3 (continued)  
 FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
 ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
 ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
 SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
<u>Venting/ Discharges to Air</u>	RI Clean Air Act (RIGL, Title 23, Chapter 23) General Air Quality and Air Emissions Requirements			
	<ul style="list-style-type: none"> <li>RI Air Pollution Control Regulations, RI Dept. of Health, Div. of Air Pollution Control, effective 8/2/67, most recently amended 5/20/91</li> </ul>			
	- Regulation No. 1 - Visible Emissions	Applicable	No air contaminant emissions are allowed for more than 3 minutes in any one hour which are greater than or equal to 20% opacity.	Air emissions from remedial actions will meet emission levels in regulation.
	- Regulation No. 5 - Fugitive Dust	Applicable	Requires that reasonable precaution be taken to prevent particulate matter from becoming airborne.	On-site remedial actions will use good industrial practices to prevent particulate matter from becoming airborne.
	- Regulation No. 7 - Emissions Detrimental to Person or Property	Applicable	Prohibits emissions of contaminants which may be injurious to human, plant or animal life or cause damage to property or which reasonably interferes with the enjoyment of life and property.	All emissions from landfill vents will meet this requirement or gas treatment will be required.
	- Regulation No. 9 - Approval to Construct, Install, Modify or Operate	Applicable	Establishes guidelines for the construction, installation, modification or operation of potential air emission units. Establishes permissible emission rates for some contaminants.	Construction, installation, modification, or operation of landfill gas vents will meet these requirements.
	- Regulation No. 15 - Control of Organic Solvent Emissions	Applicable	Limits the amount of organic solvents emitted to the atmosphere.	If landfill gas emissions exceed limits in this regulation, emission controls will be designed and implemented to meet these requirements.

TABLE 4-3 (continued)  
 FEDERAL AND STATE ACTION-SPECIFIC ARARs AND TBCs  
 ALTERNATIVE 2 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL STORM PROTECTION, AND DEED RESTRICTIONS  
 ALTERNATIVE 3 - RCRA SUBTITLE C MULTI-LAYER CAP, SLURRY WALL,  
 SHEET PILE WALL, RIPRAP STORM PROTECTION AND DEED RESTRICTIONS  
 SITE 09 - ALLEN HARBOR LANDFILL

AUTHORITY/ ACTION	REQUIREMENT	STATUS	SYNOPSIS	ACTION TAKEN TO MEET ARAR
Venting/ Discharges to Air (cont.)	- Regulation No. 17 - Odors	Applicable	Prohibits the emission of air contaminants which create an objectionable odor beyond the property line of the site.	Gas vent emissions and construction activities will meet this requirement to the maximum extent practicable.
	- Regulation No. 22 - Air Toxics	Applicable if air emissions contain regulated substances	<del>Requires construction permits for certain sources defined under Regulation No. 9.</del>	<del>Appropriate construction permit equivalents will be attained as necessary.</del>

*Prohibit the emission of specified contaminants at rate which would result in ground level concentrations greater than acceptable ambient levels or acceptable ambient levels with LAER, as set in the regulation.*

*If necessary to meet these standards, air emissions control equipment will be designed for landfill gas emissions control.*

F:

Add:

RCRA

^ 40 CFR 264.10-264.18  
Subpart B - General Facility  
Standards

Relevant and  
Appropriate

General requirements regarding waste analysis, security, training, inspections, and location applicable to a facility which stores, treats or disposes of hazardous wastes (a TSDF facility).

~~This regulation may be applicable to remedial actions which address a waste which is a listed or characteristic waste under RCRA and which constitute current treatment, storage, or disposal as certified by RCRA.~~

RCRA

^ 40 CFR 264.30-264.37  
Subpart C - Preparedness  
and Prevention

Relevant and  
Appropriate

Requirements applicable to the design and operation, equipment, and communications associated with a TSDF facility, and to arrangements with local response departments.

~~This regulation may be applicable to remedial actions which address a waste which is a listed or characteristic waste under RCRA and which constitute current treatment, storage, or disposal as certified by RCRA.~~

RCRA

^ 40 CFR 264.50-264.56  
Subpart D - Contingency Plan  
and Emergency Procedures

Relevant and  
Appropriate

Emergency planning procedures applicable to a TSDF facility.

~~This regulation may be applicable to remedial actions which address a waste which is a listed or characteristic waste under RCRA and which constitute current treatment, storage, or disposal as certified by RCRA.~~